



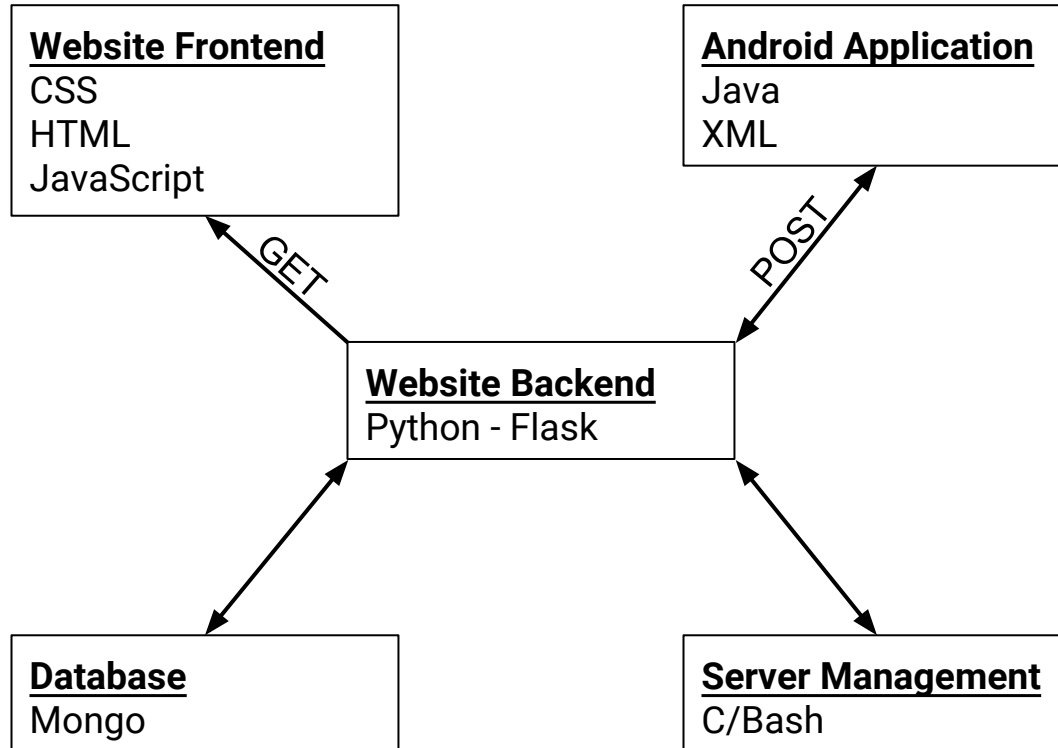
kyzr THE
PROJECT

Design
Review

What is Kyzr?

- Virtual torch-passing app
- Full stack implementation
- A use case! Let's act it out.

Design Overview



Android Application Design

- One activity, one fragment (for now)
 - Activity handles I/O logic - NFC, GPS, Internet access
 - Fragment updates based on state of activity
- NFC
 - Leveraging Android Beam - P2P implementation for NFC
 - Currently held Torch ID sent as packet, received by friend
- GPS
 - Using Google's Play Services Fused Location Provider
 - High accuracy, low battery usage - relatively simple implementation
- Internet Access
 - Networking class that interacts with website backend

Database Design

- Implemented with MongoDB - document-structured (JSON)
- One database, one 'collection'
- Sample collection:
 - Document_ID : Phone's ID
 - Curr_Torch: Torch's ID
 - Transactions:
 - Sample Transaction1:
 - Latitude
 - Longitude
 - Timestamp

Website Backend and Frontend Design

- Frontend:
 - Information about Kyzr
 - Map of where each torch has been
 - HTML, CSS, Javascript
- Backend:
 - Handles server requests
 - Manages flow of information in and out of database
 - Written in Python using Flask web microframework

Server Design

- Running Debian 7 with Apache Server
- Domain name purchased and linked to IP
- Security measures taken to ensure that the server is secure
 - Root access not allowed via SSH
 - Iptables and FailtoBan
- Git repo setup on server
 - Git hooks allow pushing to server repo and seeing changes immediately on the site
 - Low RAM usage (only 256mb RAM on server) by Optimizing config for Apache Server
- Going to purchase a higher RAM server (2gb should suffice)

Current Issues - Design Decisions

- Ability of server to handle many requests
- UI Design
- Javascript, Flask, and Google Maps
- Validation of some components

Design Questions

- Since NFC is only one way, how do we tell the phone that sent the request to update its ID after the transaction has occurred? How do we do this without running into issues related to latency?
- What do we do about the fact that some transactions may occur when a device is offline?
- What is the most advantageous implementation for the structure of our database?
- Should we incorporate a user system so that people can view where their torches have gone via a user name or is phone ID sufficient?